

Amendments to the Claims:

This listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of the Claims:

1. (Currently Amended) A plasma processing system for processing a substrate, comprising:

a plasma processing chamber within which a plasma is both ignited and sustained for said processing, said plasma processing chamber having an upper end and a lower end, said plasma processing chamber contains a material that does not substantially react with reactive gas chemistries that are delivered into said plasma processing chamber, and wherein said material of said plasma processing chamber is selected from a group of materials consisting of silicon carbide, quartz, silicon, silicon dioxide, carbon, boron carbide, and boron nitride;

a coupling window disposed at an upper end of said plasma processing chamber.

an RF antenna arrangement disposed above a plane defined by said substrate when said substrate is disposed within said plasma processing chamber for said processing;

an electromagnet arrangement disposed above said plane defined by said substrate, said electromagnet arrangement being configured so as to result in a radial variation in the a controlled magnetic field within said plasma processing chamber in the region proximate to said coupling window and antenna when at least one direct current is supplied to said electromagnet arrangement, said radial variation being effective to affect processing uniformity across said substrate;

a dc power supply coupled to said electromagnet arrangement, said dc power supply having a controller to vary a magnitude of said at least one direct current, thereby changing said radial variation in said controlled magnetic field within said plasma processing chamber in said region proximate said antenna to improve said processing uniformity across said substrate.

2. (Original) The plasma processing system of claim 1 wherein said plasma processing chamber includes an inner surface and at least the inner surface of the plasma processing chamber is made of a material that does not substantially interact with reactive gas chemistries that are flown into said plasma processing chamber.

3. (Cancelled)

4. (Original) The plasma processing system of claim 1 wherein said plasma processing chamber is entirely made of a material that does not substantially interact with reactive gas chemistries that are delivered into the single chamber.

5. (Original) The plasma processing system of claim 4 wherein said material of said plasma processing chamber is selected from a group of materials consisting of silicon carbide, quartz, silicon, silicon dioxide, carbon, boron carbide, and boron nitride.

6. (Original) The plasma processing system of claim 1 wherein said material of said plasma processing chamber is silicon carbide.

7. (Original) The plasma processing system of claim 6 wherein the silicon carbide of said plasma processing chamber is selected from a group of materials consisting of Chemical Vapor Deposition (CVD), Slipcast Forming, hot-pressed and sintered, iso-statically-pressed and sintered formed silicon carbide.

8. (Original) The plasma processing system of claim 1 wherein the silicon carbide of said plasma processing chamber is Chemical Vapor Deposition (CVD) deposited silicon carbide.

9. (Original) The plasma processing system of claim 2 wherein said material of said plasma processing chamber is a coating of material.

10. (Original) The plasma processing system of claim 2 wherein said material of said plasma processing chamber is a coating of Silicon carbide.

11. (Currently Amended) The plasma processing system of claim 2 wherein material forming said inner surface of said plasma processing chamber is provided by a bonded assembly consisting of a suitable material bonded to the chamber wall.

12. (Original) The plasma processing system of claim 11, wherein said bonded assembly is bonded with a electrically conductive or a thermally conductive adhesive.

13. (Original) The plasma processing system of claim 11, wherein said bonded assembly is configured to reliably form a significant part of the plasma ground.

14. (Original) The plasma processing system of claim 11, wherein said bonded assembly is comprised of several segments or tiles of said suitable material bonded to the chamber wall.

15. (Original) The plasma processing of claim 11, wherein said suitable material is Silicon carbide.

16. (Original) The plasma processing system of claim 2, wherein material forming said inner surface of said plasma processing chamber is a provided by a bonded assembly consisting of a suitable material bonded to a support said, support being attached to the chamber wall.

17. (Original) The plasma processing system of claim 16, wherein said bonded assembly is bonded with an electrically conductive or a thermally conductive adhesive.

18. (Original) The plasma processing system of claim 16, wherein said bonded assembly is configured to reliably form a significant part of plasma ground.

19. (Original) The plasma processing system of claim 16, wherein said bonded assembly is comprised of several segments or tiles.

20. (Original) The plasma processing system as recited in claim 16, wherein said suitable material is Silicon carbide.

21. (Original) The plasma processing system of claim 2 further comprising:

a substrate support configured to support said substrate during said processing, wherein said substrate support forming part of the inner surface of the reactor is made of a material that is more electrically resistant than that of the material of said plasma processing chamber.

22. (Original) The plasma processing system of claim 21 wherein said material of said substrate support is selected from a group of materials consisting of silicon carbide, quartz, silicon, silicon dioxide, carbon, boron carbide, boron nitride, and anodized aluminum.

23. (Original) The plasma processing system of claim 21 wherein said material of said substrate support is silicon carbide.

24. (Original) The plasma processing system of claim 1 wherein said substrate represents a semiconductor wafer.

25. (Original) The plasma processing system of claim 1 wherein said substrate represents a glass or plastic panel for use in flat panel display fabrication.

26. (Original) The plasma processing system of claim 1 wherein said processing includes etching said substrate.

27. (Currently Amended) A method plasma processing system for processing a substrate in a plasma processing chamber, comprising:

igniting and sustaining plasma within said processing chamber ~~a plasma processing chamber within which a plasma is both ignited and sustained for said processing~~, said plasma processing chamber having an upper end and a lower end, at least an inner surface of said plasma processing is made of a material which is selected from a group of materials consisting of silicon carbide, quartz, silicon, silicon dioxide, carbon, boron carbide, and boron nitride[[:]], a coupling window disposed at an upper end of said plasma processing chamber[[:]], and an RF antenna arrangement disposed above a plane defined by said substrate when said substrate is disposed within said plasma processing chamber for said processing;

controlling a magnetic field in an electromagnet arrangement disposed above said plane defined by said substrate, said electromagnet arrangement being configured so as to result in a radial variation in the controlled magnetic field within said plasma processing chamber in the region proximate said coupling window and antenna when at least one direct current is supplied to said electromagnet arrangement, said radial variation being effective to affect processing uniformity across said substrate; and

varying magnitude of said at least one direct current in a dc power supply coupled to said electromagnet arrangement, said dc power supply having a controller to vary a magnitude of said at least one direct current, thereby changing said radial variation in said controlled magnetic field within said plasma processing chamber in said region proximate said antenna to improve said processing uniformity across said substrate.

28. (Original) A plasma processing system for processing a substrate, comprising:

a plasma processing chamber within which a plasma is both ignited and sustained for said processing, said plasma processing chamber having an upper end and a lower end, at least an inner surface of said plasma processing is made of silicon carbide;

a coupling window disposed at an upper end of said plasma processing chamber.

an RF antenna arrangement disposed above a plane defined by said substrate when said substrate is disposed within said plasma processing chamber for said processing;

an electromagnet arrangement disposed above said plane defined by said substrate, said electromagnet arrangement being configured so as to result in a radial variation in the controlled magnetic field within said plasma processing chamber in the region proximate said coupling window and antenna when at least one direct current is supplied to said electromagnet arrangement, said radial variation being effective to affect processing uniformity across said substrate; and

a dc power supply coupled to said electromagnet arrangement, said dc power supply having a controller to vary a magnitude of said at least one direct current, thereby changing said radial variation in said controlled magnetic field within said plasma processing chamber in said region proximate said antenna to improve said processing uniformity across said substrate.

29. (Original) The plasma processing system of claim 28 wherein said coupling window has at least one surface made of silicon carbide.

30. (Original) The plasma processing system of claim 28 wherein the silicon carbide of said plasma processing chamber is selected from a group of materials consisting of Chemical Vapor Deposition (CVD), Slipcast Forming, hot-pressed, sintered, iso-statically-pressed, and sintered formed silicon carbide.

31-48. (Cancelled)